

## Question #262

Key: D

$$L(\omega) = \frac{\frac{1}{\omega} \frac{1}{\omega} \frac{1}{\omega} \left( \frac{\omega - 4 - p}{\omega} \right)^2}{\left( \frac{\omega - 4}{\omega} \right)^5} = \frac{(\omega - 4 - p)^2}{(\omega - 4)^5}$$

$$l(\omega) = 2 \ln(\omega - 4 - p) - 5 \ln(\omega - 4)$$

$$l'(\omega) = \frac{2}{\omega - 4 - p} - \frac{5}{\omega - 4} = 0$$

$$0 = l'(29) = \frac{2}{25 - p} - \frac{5}{25}$$

$$p = 15.$$

The denominator in the likelihood function is  $S(4)$  to the power of five to reflect the fact that it is known that each observation is greater than 4.